

Abstract of the Disclosure

A method for forming a fusion bond between polymeric materials. Preferably, a detector detects thermal radiation being emitted from a fusion bond site while a laser beam impinges on and heats at least a portion of the bond site. In an aspect of the present invention the detector can provide an electrical signal to a signal processor for controllably adjusting the laser beam power. In another aspect of the present invention, the electrical signal may be substantially correlated to the temperature of at least a region of the bond site. The present invention is also directed to an apparatus for forming a fusion bond between polymeric materials. The apparatus includes a workpiece support, a laser, a detector, and a signal processor. The workpiece support preferably positions a first and second polymeric body so that a fusion bond site is formed. The laser impinges on at least a portion of the fusion bond site such that it emits thermal radiation. The detector senses the thermal radiation and preferably provides a signal to the signal processor. In an aspect of the present invention, the signal processor controllably adjusts the power of the laser beam based on the signal provide by the detector.

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